

WHAT IS CLAIMED IS:

1. A radio-communication control method in the communication system wherein the user terminals which are requesting radio-communication are connected to the wired
5 network via the access points, in which:

the received powers of the signals transmitted from a plurality of access points are measured with user terminals and the desired signal pair interference power ratio is obtained from a ratio of the received power of
10 signal at the access point to which a user terminal belongs to the received power of signal at the other access point;

when said signal pair interference power ratio is larger than the predetermined signal pair interference power ratio, the user terminal is judged to exist within the
15 non-interference domain;

when said signal pair interference power ratio is smaller than the predetermined signal pair interference power ratio, the user terminal is judged to exist within the interference domain;

20 the transmission time from the access point to a user terminal in the non-interference domain and to a user terminal in the interference domain is divided with time to respectively obtain a first time period and a second time period;

simultaneous communications are performed, in said first time period, to a plurality of user terminals in the non-interference domain from a plurality of corresponding access points; and

5 communications are performed on the time division basis, in said second time period, to the user terminals in the interference domain from a plurality of access points.

2. The communication system according to claim 1,
10 wherein sharing of time of said first time period and second time period is determined based on a ratio of said user terminals in the non-interference domain to said user terminals in the interference domain for each access point or on a data communication amount to respective domains.

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3. The communication system according to claim 1,
 wherein each access point invalidates, in said first time period, the carrier sense for detecting the other communication apparatus which is making communication using
20 the common frequency band.

4. The communication system according to claim 1,
 wherein the beam signal transmitted in the predetermined

transmission power from each access point discriminates said non-interference domain and said interference domain based on the power received at each user terminal.

5 5. The communication system according to claim 4, wherein the transmission power of the data signal to each user terminal is controlled, in said first time period, depending on the received power of said beacon signal.

10 6. A management server which is connected, within a radio-communication system comprising a plurality of access points and a plurality of user terminals connected to a wired network through said access points, to a plurality of said access points for management of data transmission to a
15 plurality of corresponding user terminals from each access point, comprising:

 a communication interface signal processing part for receiving, via a plurality of said access points, notification of the desired signal pair interference power
20 ratio which is a ratio of the received power of the desired signal and interference signal at respective terminals of a plurality of said user terminals;

a database for storing the information received with said communication interface signal processing part; and

a transmitting control information calculation part for generating the transmitting control information to be
5 transmitted to a plurality of said access points via said wired interface signal processing part, based on the information stored in said database,

wherein said transmitting control information calculation part discriminates, based on said desired
10 signal pair interference power ratio, a plurality of said user terminals as the user terminals in the non-interference domain and the user terminals in the interference domain, divides with time the transmission times from the access points to the user terminals in the non-interference domain
15 and to the user terminals in the interference domain to respectively generate a first time period and a second time period, and transmits, to a plurality of said access points, the control signal to instruct the simultaneous communications, in said first time period, to a plurality
20 of user terminals in the non-interference domain from a plurality of corresponding access points and the communications, through the time-division in a plurality of said access points, in said second time period, to the user terminals in the interference domain.

7. The management server according to claim 6, wherein
said transmitting control information calculation part
determines time sharing of said first time period and second
5 time period based on a ratio of the user terminals in said
non-interference domain to the user terminals in said
interference domain for each access point.

8. The management server according to claim 6, wherein
10 said transmitting control information calculation part
determines time sharing of said first time period and second
time period based on a data communication amount to said
non-interference domain and said interference domain for
each access point.

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9. The management server according to claim 6, wherein
a synchronous signal generator for generating a synchronous
signal is provided and said synchronous signal is
transmitted to a plurality of access points via said wired
20 interface signal processing part.

10. The management server according to claim 6, wherein
the information of the data transmitting condition to a

plurality of said user terminals from each access point is stored in said database.

11. The management server according to claim 10, wherein said data transmitting condition is expressed with the
5 number of packets for each terminal, otherwise for each domain of the non-interference domain or interference domain in the transmitting queue to store the data packets transmitted to a plurality of said user terminals from each access point.

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12. The management server according to claim 11, wherein said transmitting queue is provided therein through transmission of data signal transmitted to a plurality of said user terminals via a plurality of access points from
15 said wired network.

13. An access point for making radio-communications with a plurality of user terminals in a radio-communication system comprising a plurality of access point devices, a
20 plurality of user terminals connected to the wired network via said access point devices, and a management server for management of data transmissions to a plurality of corresponding user terminals from a plurality of said access point devices, comprising:

a synchronous timer for synchronization based on a synchronous signal received from said management server; and

a transmission control part for controlling signal
5 transmission to a plurality of said user terminals based on the transmitting control information transmitted from said synchronous timer and said management server,

wherein a plurality of said user terminals are discriminated, based on the predetermined signal pair
10 interference power ratio as the received power ratio of the desired signal and interference signal in respective user terminals, to the user terminals in the non-interference domain and the user terminals in the interference domain; and

15 said transmitting control information divides with time the transmission times from the access points to the user terminals in the non-interference domain and the user terminals in the interference domain to respectively generate a first time period and a second time period and
20 instructs a plurality of said access points to make simultaneous transmissions with the corresponding other access points to a plurality of user terminals in the non-interference domain in said first time period and to make communications through time-division with the other

access points to the user terminals in the interference domain in said second time period.

14. The access point according to claim 13, wherein said
5 transmitting control information includes the transmission power information of signal transmission to each user terminal and said transmission control part makes signal transmission to said user terminals with the transmission power in accordance with said transmission power
10 information.

15. The access point according to claim 13, wherein a beacon generator is provided, a beacon signal generated with said beacon generator is transmitted by radio transmission,
15 each user terminal receives the information of the received power of the beacon signals of the relevant access point device and the other access point devices and then transfers this information to said management server, and said transmitting control information has been calculated based
20 on the information of said received power.

16. The access point according to claim 13, wherein each access point invalidates, in said first time period, the

carrier sense for detecting the other communication apparatus which is making communication with the common frequency band.

5 17. The communication control method according to claim 1, wherein the unit of communication to user terminals from access points is defined as one frame period, a ratio (probability of non-interference) of the number of user terminals in the non-interference domain to the number of
10 user terminals belonging to one access point is obtained, a plurality of access points make the simultaneous communications to the user terminals in the non-interference domain for the time determined by multiplying said one frame time with a product of the
15 probabilities of non-interfering of each one among a plurality of access points, a plurality of access points make the communications on the time-division basis to the user terminals in the interference domain for the time determined by multiplying said one frame time with a product
20 of the values (probability of interference) obtained in each one of a plurality of access points by subtracting the probability of non-interfering from one (1), only one access point makes the communication with user terminals in the non-interference domain for the remaining period of one

frame period, and the other access points divide the period for communications with the user terminals in the interference domain.

5 18. The communication control method according to claim 17, wherein the time determined by multiplying said one frame time with the minimum value of the probability of non-interfering of each access point is assigned, in a plurality of access points, for the simultaneous
10 communications to the user terminals in the non-interference domain, and the other time is assigned for the communications based on the time-division in a plurality of access points to the user terminals in the interference domain.

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19. The communication control method according to claim 17, wherein the probability of non-interfering is defined as the total sum of traffics of the user terminals in non-interference domain for the total sum of traffics of the user
20 terminals belonging to one access point.

20. The communication control method according to claim 19, wherein the number of bits per unit time in which the

data to user terminals from access points enters the transmission queue of the access point.